Thank you for purchasing this Esco Laboratory Fume Hood. Please read this manual thoroughly to familiarize yourself with the many unique features and exciting innovations we have built into your new equipment. Esco provides many other resources at our website, www.escoglobal.com, to complement this manual and help you enjoy many years of productive and safe use of your Esco products.

User Manual

Frontier

Laboratory Fume Hood

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Esco Laboratory Fume Hood (EFB/EFH/EFD/EFU) User Manual
Version A - Released May 2011

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Esco reserves the right to make periodic minor design changes without obligation to notify any person or entity of such change.
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USER SECTION

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Warranty Terms and Conditions

Esco products come with either a 1, 2 or 3 year limited warranty, depending on the product purchased, beginning on the date of shipment from any Esco international warehousing location. To determine which warranty applies to your product, refer to the appendix below.

Esco's limited warranty covers defects in materials and workmanship. Esco's liability under this limited warranty shall be, at our option, to repair or replace any defective parts of the equipment, provided if proven to the satisfaction of Esco that these parts were defective at the time of being sold, and that all defective parts shall be returned, properly identified with a Return Authorization.

This limited warranty covers parts only, and not transportation/insurance charges.

This limited warranty does not cover:

- Freight or installation (inside delivery handling) damage. If your product was damaged in transit, you must file a claim directly with the freight carrier.
- Products with missing or defaced serial numbers.
- Products for which Esco has not received payment.
- Problems that result from:
    - External causes such as accident, abuse, misuse, problems with electrical power, improper operating environmental conditions.
    - Servicing not authorized by Esco.
    - Usage that is not in accordance with product instructions.
    - Failure to follow the product instructions.
    - Failure to perform preventive maintenance.
    - Problems caused by using accessories, parts, or components not supplied by Esco.
    - Damage by fire, floods, or acts of God.
    - Customer modifications to the product
- Consumables such as filters (HEPA, ULPA, carbon, pre-filters) and fluorescent / UV bulbs.
- Esco is not liable for any damage incurred on the objects used on or stored in Esco equipment. If the objects are highly valuable, user is advised to have in place independent external preventive measures such as connection to a centralized alarm system.

Factory installed, customer specified equipment or accessories are warranted only to the extent guaranteed by the original manufacturer. The customer agrees that in relation to these products purchased through Esco, our limited warranty shall not apply and the original manufacturer's warranty shall be the sole warranty in respect of these products. The customer shall utilize that warranty for the support of such products and in any event not look to Esco for such warranty support.

Esco encourages all users to register their equipment online at www.escoglobal.com/warranty or complete the warranty registration form included with each product.

ALL EXPRESS AND IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN TIME TO THE TERM OF THIS LIMITED WARRANTY. NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER THE LIMITED WARRANTY PERIOD HAS EXPIRED. ESCO DOES NOT ACCEPT LIABILITY BEYOND THE REMEDIES PROVIDED FOR IN THIS LIMITED WARRANTY OR FOR SPECIAL, INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, ANY LIABILITY FOR THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES, FOR PRODUCTS NOT BEING AVAILABLE FOR USE, OR FOR LOST WORK. ESCO'S LIABILITY WILL BE NO MORE THAN THE AMOUNT YOU PAID FOR THE PRODUCT THAT IS THE SUBJECT OF A CLAIM. THIS IS THE MAXIMUM AMOUNT FOR WHICH ESCO IS RESPONSIBLE.

These Terms and Conditions shall be governed by and construed in accordance with the laws of Singapore and shall be subject to the exclusive jurisdiction of the courts of Singapore.

Technical Support, Warranty Service Contacts
USA: 1-877-479-3726
Singapore: +65 65420833
Global Email Helpdesk: support@escoglobal.com
Visit http://www.escoglobal.com/ to talk to a Live Support Representative
Distributors are encouraged to visit the Distributor Intranet for self-help materials.

Product Appendix, Warranty Listings

Biological Safety Cabinets, Laminar Flow Cabinets, HEPA-Filtered Cabinets (except Streamline brand)	The warranty periods for BSC may vary by country. Contact your local distributor for specific warranty details.
Laboratory Fume Hoods	1 year limited.
Ductless Fume Hoods	3 years limited for Ascent Opti's, 5 years for Ascent Max's.
Cleanroom Equipment	1 year limited.
Laboratory Ovens and Incubators	1 year limited.
CO_2 Incubators	2 years limited.
Containment/Pharma Products	2 years limited.
Ultralow Temperature Freezer	3 years limited. 60 months on Compressor.

The warranty period starts two months from the date your equipment is shipped from Esco facility for international distributors. This allows shipping time so the warranty will go into effect at approximately the same time the equipment is delivered to the user. The warranty protection extends to any subsequent owner during the warranty period. Distributors who stock Esco equipment are allowed an additional four months for delivery and installation, providing the product is registered with Esco. User can register product online at www.escoglobal.com/warranty or complete the warranty registration form included with each product.

Policy updated on 12th Apr 2011 (This limited warranty policy does not apply to products purchased before 12th Apr 2011)

Introduction

1. Products Covered

Esco High Performance Laboratory Fume Hood – Frontier Acela Family					
Model	Electrical Rating	1.2 meters 4 feet	1.5 meters 5 feet	1.8 meters 6 feet	2.4 meters 8 feet
Frontier Junior (EFB)	220-240 V AC, 50 Hz, 1Φ	EFB-4A1	EFB-5A1	EFB-6A1	
	110-120 V AC, 60Hz, 1Φ	EFB-4A2	EFB-5A2	EFB-6A2	
	220-240 V AC, 50 Hz, 1Φ	EFB-4A3	EFB-5A3	EFB-6A3	
Frontier Mono (EFH)	220-240 V AC, 50 Hz, 1Φ	EFH-4A1	EFH-5A1	EFH-6A1	
	110-120 V AC, 60Hz, 1Φ	EFH-4A2	EFH-5A2	EFH-6A2	
	220-240 V AC, 50 Hz, 1Φ	EFH-4A3	EFH-5A3	EFH-6A3	
Frontier Duo (EFD)	220-240 V AC, 50 Hz, 1Φ	EFD-4A1 EFD-4B1	EFD-5A1 EFD-5B1	EFD-6A1 EFD-6B1	EFD-8A1 EFD-8B1
	110-120 V AC, 60Hz, 1Φ	EFD-4A2 EFD-4B2	EFD-5A2 EFD-5B2	EFD-6A2 EFD-6B2	EFD-8A2 EFD-8B2
	220-240 V AC, 50 Hz, 1Φ	EFD-4A3 EFD-4B3	EFD-5A3 EFD-5B3	EFD-6A3 EFD-6B3	EFD-8A3 EFD-8B3
Frontier Edusafe (EFU)	220-240 V AC, 50 Hz, 1Φ	EFU-4A1	EFU-5A1	EFU-6A1	
	110-120 V AC, 60Hz, 1Φ	EFU-4A2	EFU-5A2	EFU-6A2	
	220-240 V AC, 50 Hz, 1Φ	EFU-4A3	EFU-5A3	EFU-6A3	

Note: *MCB is not included with the fume hood*

2. Safety Warning

- Anyone working with, on or around this equipment should read this manual. Failure to read, understand and follow the instructions given in this documentation may result in damage to the unit, injury to operating personnel, and / or poor equipment performance.
- Any internal adjustment, modification or maintenance to this equipment must be undertaken by qualified service personnel.
- The use of any hazardous materials in this equipment must be monitored by an industrial hygienist, safety officer or some other suitably qualified individual.
- Before you process, you should thoroughly understand the installation procedures and take note of the environmental / electrical requirements.
- In this manual, important safety related points will be marked with the symbol.
- If the equipment is used in a manner not specified by this manual, the protection provided by this equipment may be impaired.

3. Limitation of Liability

The disposal and / or emission of substances used in connection with this equipment may be governed by various local regulations. Familiarization and compliance with any such regulations are the sole responsibility of the users. Esco's liability is limited with respect to user compliance with such regulations.

4. European Union Directive on WEEE and RoHS

The European Union has issued two directives:

• **Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE)**

This product is required to comply with the European Union's Waste Electrical & Electronic Equipment (WEEE) Directive 2002/96/EC. It is marked with the following symbol:

Esco sells products through distributors throughout Europe. Contact your local Esco distributor for recycling/disposal.

• **Directive 2002/95/EC on Restriction on the use of Hazardous Substances (RoHS)**

With respect to the directive on RoHS, please note that this hood falls under category 8 (medical devices) and category 9 (monitoring and control instruments) and is therefore exempted from requirement to comply with the provisions of this directive.

Declaration of Conformation

In accordance to EN ISO/IEC 17050-1:2010

We, Esco Micro Pte. Ltd.
of 21 Changi South Street 1
Singapore, 486777
Tel: +65 6542 0833
Fax: +65 6542 6920

declare on our sole responsibility that the product:

Category : Laboratory Fume Hood
Brand : Frontier Junior
Model : EFB-4A1, EFB-5A1, EFB-6A1

in accordance with the following directives:

2006/95/EEC : The Low Voltage Directive and its amending directives
92/31/EEC : The Electromagnetic Compatibility Directive and its amending directives

has been designed to comply with the requirement of the following Harmonized Standard:

Low Voltage : EN 61010-1:2010
EMC : EN 61326-1:2006 Class B
Design/ Performance Criteria : ANSI/ASHRAE 110-1995
European Union Standard EN 14175-3

More information may be obtained from Esco's authorized distributors located within the European Union. A list of these parties and their contact information is available on request from Esco.

XQ Lin
Group CEO, Esco

This Declaration of Conformity is only applicable for 220-240V AC 50Hz units

Declaration of Conformation

In accordance to EN ISO/IEC 17050-1:2010

We, Esco Micro Pte. Ltd.
of 21 Changi South Street 1
Singapore, 486777
Tel: +65 6542 0833
Fax: +65 6542 6920

declare on our sole responsibility that the product:

Category : Laboratory Fume Hood
Brand : Frontier Mono
Model : EFH-4A1, EFH-5A1, EFH-6A1

in accordance with the following directives:

2006/95/EEC : The Low Voltage Directive and its amending directives
92/31/EEC : The Electromagnetic Compatibility Directive and its amending directives

has been designed to comply with the requirement of the following Harmonized Standard:

Low Voltage : EN 61010-1:2010
EMC : EN 61326-1:2006 Class B
Design/ Performance Criteria : ANSI/ASHRAE 110-1995
European Union Standard EN 14175-3

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Group CEO, Esco

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Declaration of Conformation

In accordance to EN ISO/IEC 17050-1:2010

We, Esco Micro Pte. Ltd.
of 21 Changi South Street 1
Singapore, 486777
Tel: +65 6542 0833
Fax: +65 6542 6920

declare on our sole responsibility that the product:

Category : Laboratory Fume Hood
Brand : Frontier Duo
Model : EFD-4A1, EFD-4B1, EFD-5A1, EFD-5B1, EFD-6A1, EFD-6B1

in accordance with the following directives:

2006/95/EEC : The Low Voltage Directive and its amending directives
92/31/EEC : The Electromagnetic Compatibility Directive and its amending directives

has been designed to comply with the requirement of the following Harmonized Standard:

Low Voltage : EN 61010-1:2010
EMC : EN 61326-1:2006 Class B
Design/ Performance Criteria : ANSI/ASHRAE 110-1995
European Union Standard EN 14175-3

More information may be obtained from Esco's authorized distributors located within the European Union. A list of these parties and their contact information is available on request from Esco.

XQ Lin
Group CEO, Esco

This Declaration of Conformity is only applicable for 220-240V AC 50Hz units

x

Declaration of Conformation

In accordance to EN ISO/IEC 17050-1:2010

We, Esco Micro Pte. Ltd.
of 21 Changi South Street 1
Singapore, 486777
Tel: +65 6542 0833
Fax: +65 6542 6920

declare on our sole responsibility that the product:

Category : Laboratory Fume Hood
Brand : Frontier Edusafe
Model : EFU – 4A1, EFU-5A1, EFU-6A1

in accordance with the following directives:

2006/95/EEC : The Low Voltage Directive and its amending directives
92/31/EEC : The Electromagnetic Compatibility Directive and its amending directives

has been designed to comply with the requirement of the following Harmonized Standard:

Low Voltage : EN 61010-1:2010
EMC : EN 61326-1:2006 Class B
Design/ Performance Criteria : ANSI/ASHRAE 110-1995
European Union Standard EN 14175-3

More information may be obtained from Esco's authorized distributors located within the European Union. A list of these parties and their contact information is available on request from Esco.

XQ Lin
Group CEO, Esco

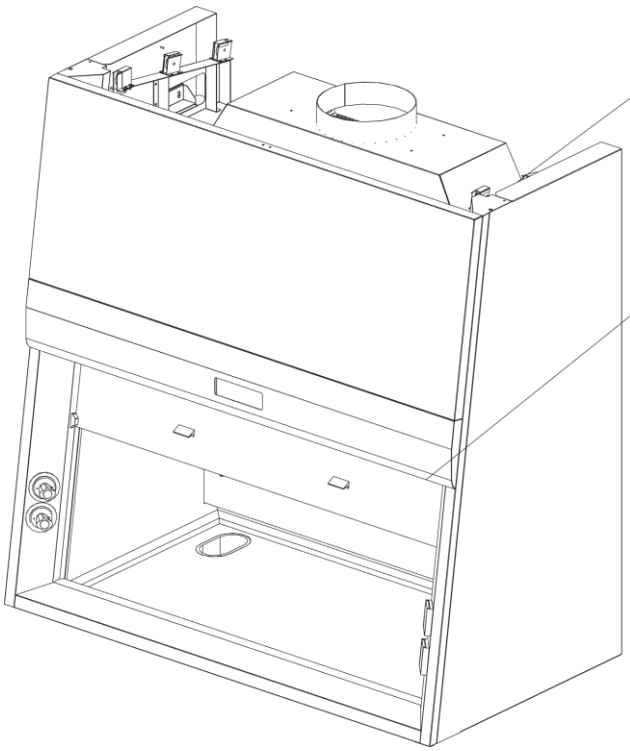
This Declaration of Conformity is only applicable for 220-240V AC 50Hz units

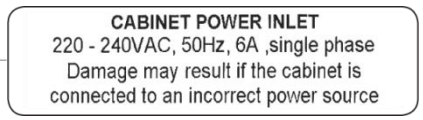
Chapter 1 - Product Information

1.1 About Frontier Series Fume Hoods

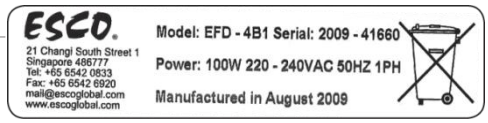
The Esco Frontier Series Fume Hood offers a solution representing design and engineering innovations that are at the forefront of fume hood technology, providing superior containment of noxious chemical fumes at a broad range of face velocities while addressing worker comfort through ergonomic design. Work zone baffles and aerodynamic airfoil are designed with computational fluid dynamics to enhance safety.

1.2 Labels




CABINET POWER INLET
220 - 240VAC, 50Hz, 6A ,single phase
Damage may result if the cabinet is
connected to an incorrect power source

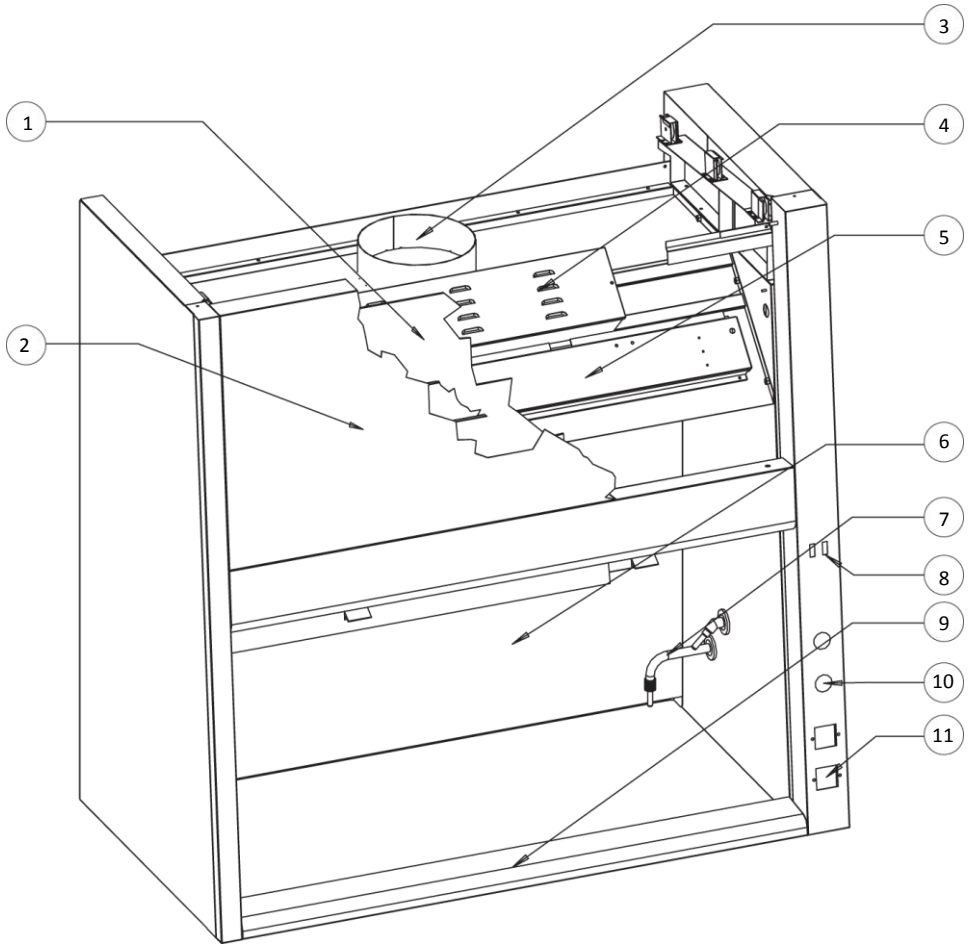
Cabinet power requirement



Model - The model of the unit.
Serial - The serial number of the unit.
Power - The power consumption and electrical requirement of the unit.
Manufactured year - The year of manufacture.

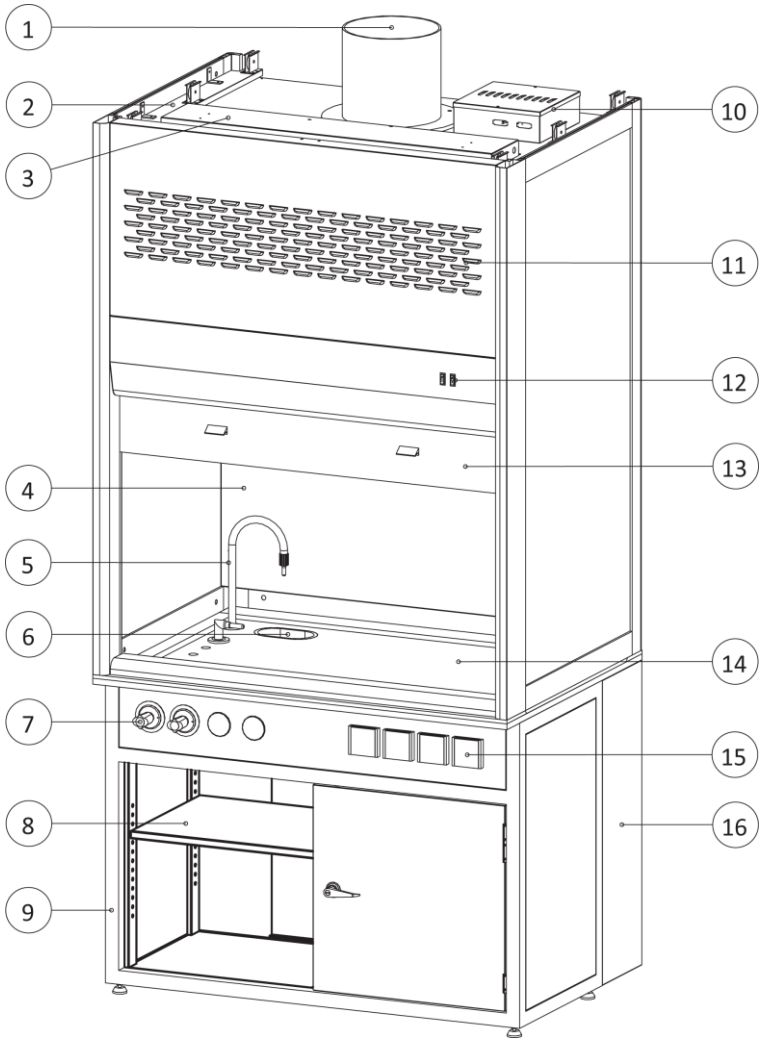
1.3 Quick View

1.3.1 EFB Series



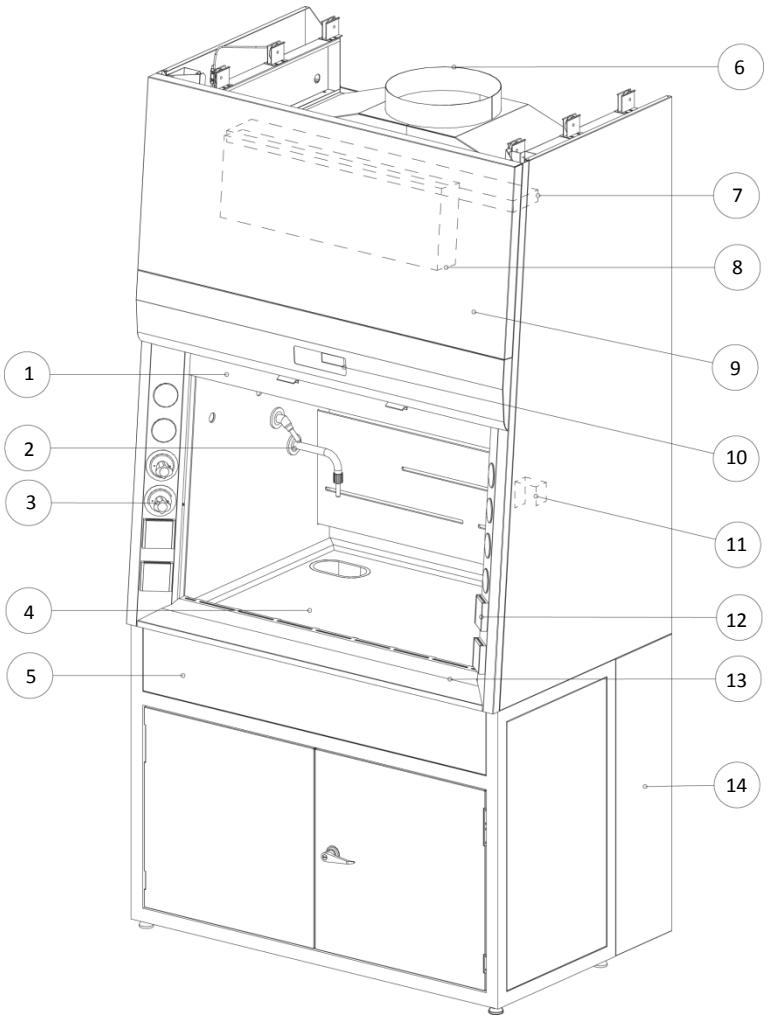
1. Counter Balanced Sash
2. Removable Front Panel
3. Exhaust Collar
4. Electrical Panel
5. Fluorescent Lamp
6. Baffle
7. Service Fixture Outlet
8. Blower, Light Switch
9. Ergonomic Airfoil
10. Service Fixture Remote Control
11. Electrical Outlets

1.3.2 EFH Series



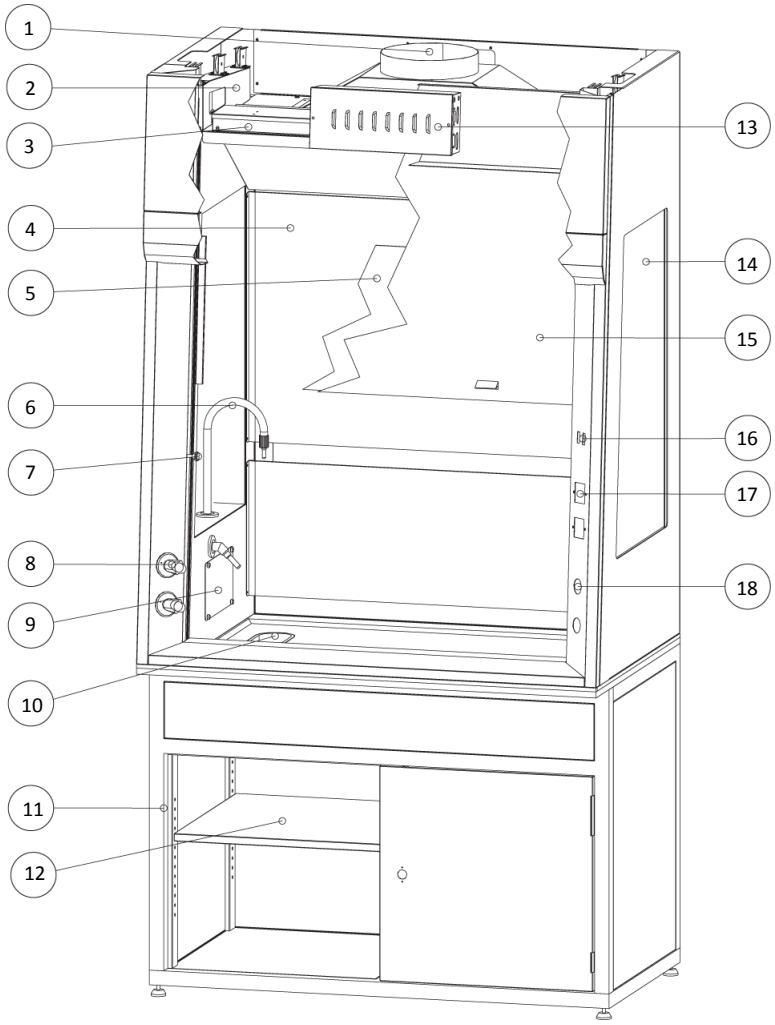
1. Exhaust collar
2. Sash-counterbalance roller base
3. Fluorescent lamp housing
4. Phenolic baffle
5. Fixture outlet nozzle
6. Polypropylene water drip cup sink
7. Fixture valve remote control
8. Adjustable base hood shelf
9. General purpose base hood
10. Electrical panel
11. Front panel with bypass louver
12. Operating switches
13. Front sash glass
14. Phenolic worktop
15. Electrical outlet
16. Base cabinet side filler panel

1.3.3 EFD Series



1. Sash window
2. Service fixture outlet
3. Service fixture remote controls
4. Phenolic Resin work top
5. Optional base cabinetry for additional storage area in the laboratory
6. Exhaust collar
7. Electrical panel
8. Fluorescent lamp
9. Removable front panel
10. Sentinel Controller (only for EFD-_B_ model)
11. Optional airflow sensor (only for EFD-_B_ model)
12. Electrical outlet
13. Airfoil
14. Base cabinet side filler panel

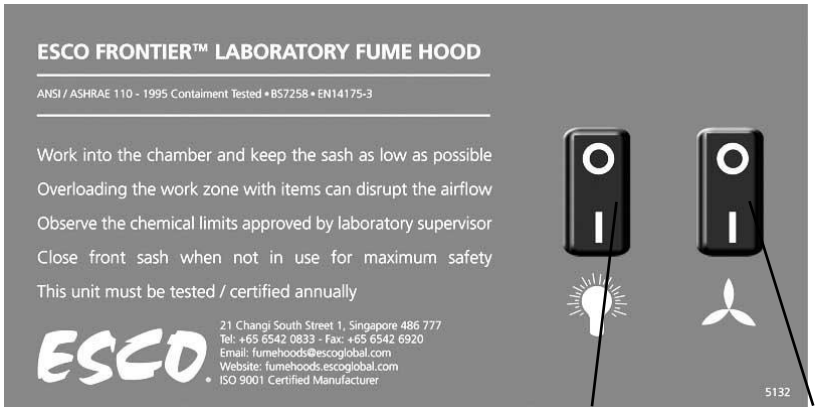
1.3.4 EFU Series



1. Exhaust collar
2. Sash-counterbalance roller base
3. Fluorescent lamp housing
4. Removable glass baffle
5. Fixed internal glass
6. Fixture outlet nozzle
7. Design opening sash lock handle
8. Fixture valve remote control
9. Fixture internal access panel
10. Polypropylene water drip cup sink
11. General purpose base cabinet
12. Adjustable base cabinet shelf
13. Electrical panel
14. Side view glass
15. Front sash glass
16. Operating switches
17. Electrical outlet
18. Fixture valve remote control provision

Chapter 2 – Control System and Operation

2.1 Basic On/Off Control


ESCO FRONTIER™ LABORATORY FUME HOOD
ANSI / ASHRAE 110 - 1995 Containment Tested • BS7258 • EN14175-3
Work into the chamber and keep the sash as low as possible
Overloading the work zone with items can disrupt the airflow
Observe the chemical limits approved by laboratory supervisor
Close front sash when not in use for maximum safety
This unit must be tested / certified annually
ESCO
21 Changi South Street 1, Singapore 486 777
Tel: +65 6542 0833 • Fax: +65 6542 6920
Email: fumehoods@escoglobal.com
Website: fumehoods.escoglobal.com
ISO 9001 Certified Manufacturer
5132

Lamp Switch Fan Switch

1. Fan Switch
    - Turns the external exhaust blower on and off (if connected).

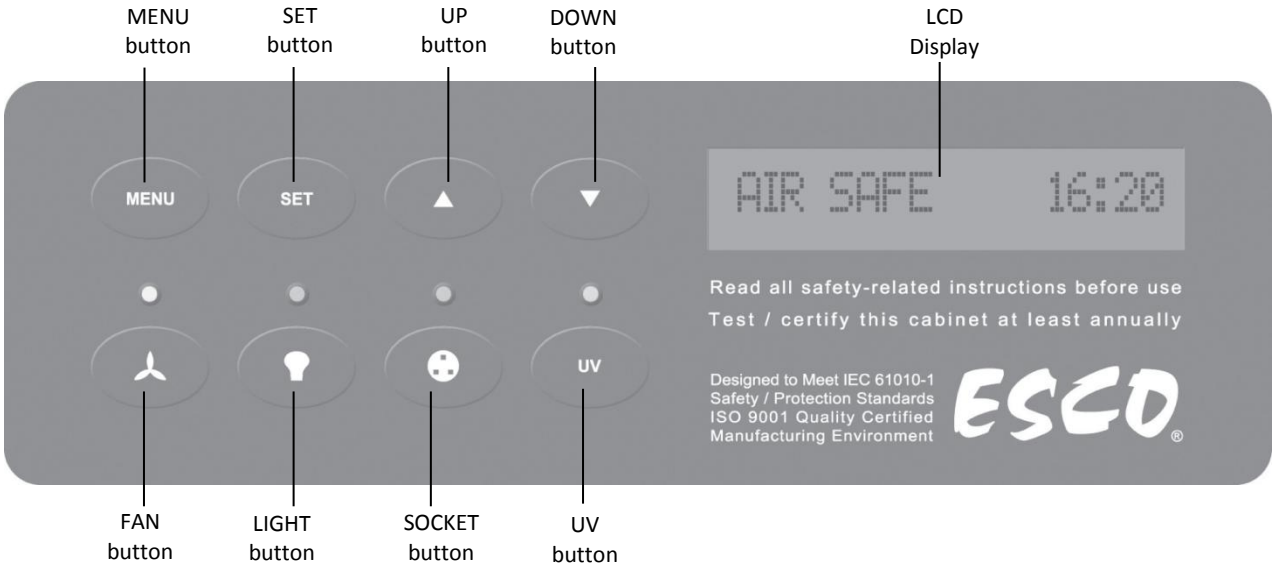
2. Lamp Switch
    - Turns the fluorescent lamps on and off.

2.2 General Fume Hood Operation

- Follow your laboratory procedure on the use of personnel protective equipment and fume hood.
- Ensure the exhaust is operating before commencing work.
- Keep your head outside of the hood.
- Work as far into the hood as possible and with slow, deliberate movements, to minimize airflow disturbances.
- Work with the sash as fully lowered as possible, utilizing the sash as a natural barrier to accidents which may occur in the hood.
- If a combination sash is installed, do not open the vertical and horizontal sashes simultaneously.
- Do not use this hood as a storage area. Items can block airflow and interfere with containment.
- Do not let organic chemicals evaporate in the hood – use a proper waste bottle. Do not leave uncapped bottles of chemicals or waste in a hood.
- If performance is suspected, or an airflow alarm is triggered (if installed), terminate usage, close the sash completely, and cease work.
- Do not use perchloric acid in a fume hood unless it is specially designed for this purpose. Explosive perchlorate salts could accumulate in the exhaust system.
- Minimize external airflow disturbances, including foot traffic.
- Certify this hood annually to verify airflow velocity, smoke patterns and containment.
- Perform routine maintenance in accordance with the manufacturer's instructions.
- In case of spills, please refer to the laboratory procedure.

Chapter 3 – EFD-B Series Sentinel Control System

3.1Sentinel Control System



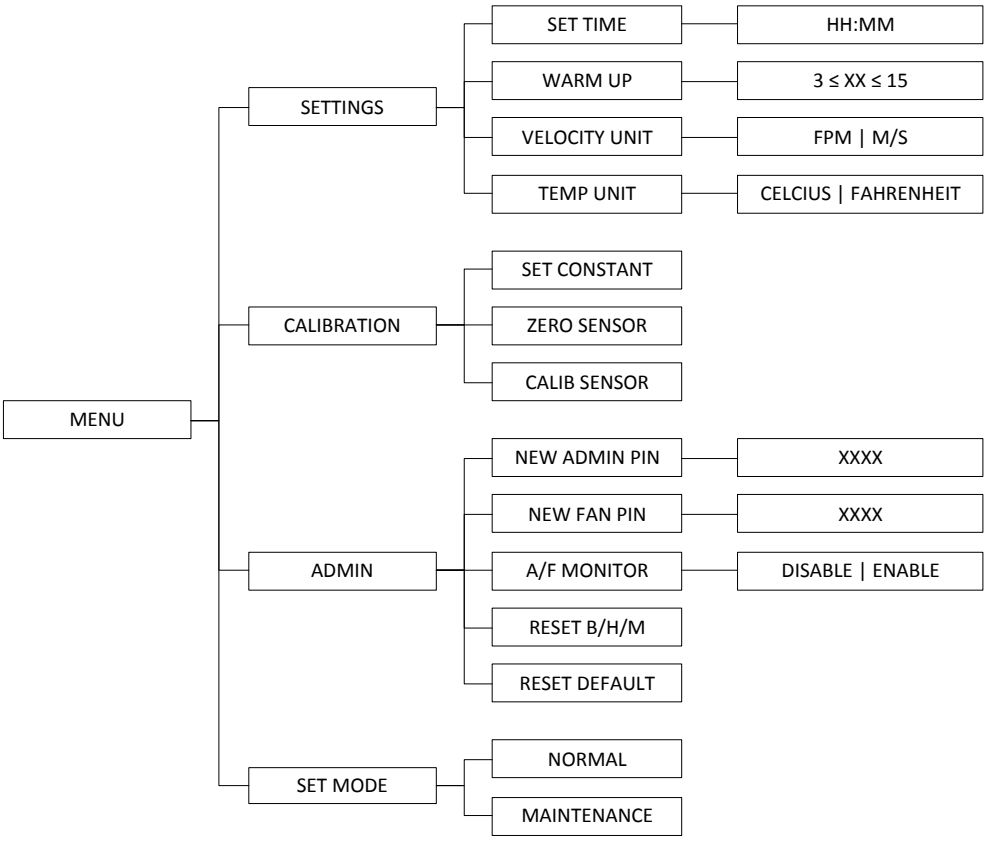
- FAN button
  - To turn on/off the exhaust blower/fan (if connected to the exhaust blower/fan system)
- LIGHT button
  - To turn on/off the light
- SOCKET button
  - To turn on/off the electrical outlets
- UV button
  - Unused
- MENU button

When you are entering menu options, the alarm will sound to indicate that the microprocessor is not monitoring the operation of the cabinet. No further warnings will be given.

  - To enter/exit the menu display
  - To cancel a selection in a menu display
- SET button
  - To choose/confirm a selection in a menu display
- UP and DOWN buttons
  - To move the sash window up or down (only in a motorized sash hood)
  - To start, stop and reset timer (only in a non-motorized sash hood)
  - To move up or down in a menu display
  - To increase or decrease a value in a menu display

3.2 Menu Options

Please refer to the following diagram for complete reference to all menu options available. Press UP or DOWN to scroll through the menu options. The user is strongly advised to exit from the menu options after making any changes in order to prevent unauthorized access to the menu.



3.2.1 Settings

The user may use the settings menu function to customize the operation of the fume hood to meet specific application requirements.

3.2.1.1 Set Clock (Time)

Users can set the time by increasing/decreasing the hour and minute values. The correct time will be maintained even after the unit is turned off.

MENU → SETTINGS → SET TIME → HH:MM

3.2.1.2 Warm-Up Timer

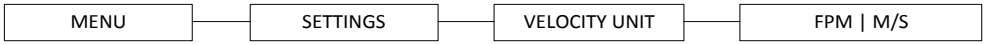
There will be a period of warm-up, before the fan is fully functioning. This is to ensure that the sensors, the fan, and the control system are stabilized, as well as purging the work zone of contaminants. The default setting is 3 minutes and user can set it up to 15 minutes.

When airflow alarm is disabled, the warm up process only takes place during the installation.

MENU → SETTINGS → WARM UP → 3 ≤ XX ≤ 15

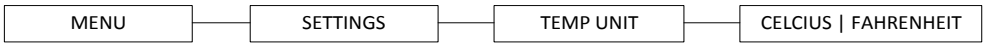
3.2.1.3 Airflow Unit Selection

Using this option, you can select the unit in which air velocity is measured and displayed. You can choose between meter per second (m/s) and feet per minute (fpm). When the fan is running and also during the calibration process, airflow measurement is displayed in the selected unit.



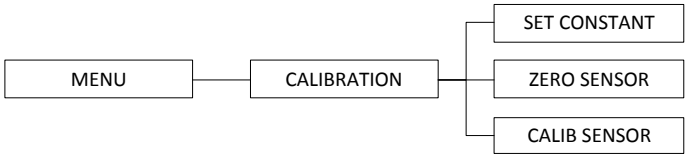
3.2.1.4 Temperature Unit Selection

Using this option, you can select the unit in which temperature is measured and displayed. You can choose between Celsius and Fahrenheit. The exhaust temperature is displayed in the selected unit.



3.2.2 Calibration

The purpose of calibration is to ensure the accuracy of the airflow display and alarm (if present). This involves measuring airflow with reference instrumentation and establishing reference between airflow sensor(s) on the fume hood to the standard reference. Calibration should only be carried out by trained personnel. This section is presents a brief overview of the calibration menu function.



3.2.2.1 Set Constant

Every sensor manufactured by Esco has a specific Sensor Constant which is used for temperature compensation performed by the temperature sensor.

3.2.2.2 Zero Sensor

This option is to let the controller record the specific sensor output voltage and correspond it to 0 m/s or 0 fpm.

3.2.2.3 Calib Sensor

This option allows proper calibration and operation of the airflow sensor alarm. There will be three points to be calibrated, namely fail point and optimum point.

Fail point is a point in which the face velocity of the fume hood deemed can no longer maintain containment. Optimum point is a point in which the face velocity of the fume hood deemed able to optimally protect the operator.

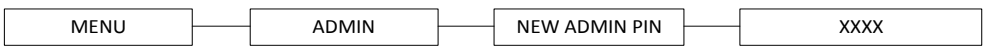
3.2.3 Admin

The admin menu allows you to change both fan and Admin. PIN, also to disable it (not recommended). The reset blower hour meter and reset UV hour meter functions are usually used after you change the blower or UV lamp as they can easily give you the indication on when to do fume hood maintenance. While the reset default function will return the options in the settings menu to their factory settings.

3.2.3.1 New ADMIN PIN

Admin. PIN restricts access to MENU functions, including service functions, like calibration. User must enter four digits PIN before accessing MENU. Admin. PIN has higher priority and can be used to control the fan (override Fan PIN).

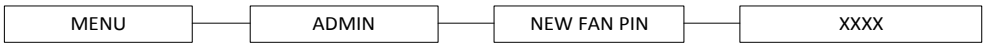
The default PIN is 0009. Setting PIN to 0000 will disable this feature.



3.2.3.2 New Fan PIN

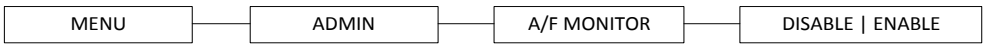
When the exhaust blower in the ducting system is connected to the fume hood, the Fan PIN restricts access to fan control. User must enter four-digit PIN before switching fan on or off. As such, it can restrict access to operating the fume hood by unauthorized personnel. It will also prevent unauthorized shutdown of the fume hood when continuous operation is required. Fan PIN is also needed to disable the alarm when the sash is fully raised and cleaning needs to be performed.

It is recommended that the Fan PIN be issued only to personnel authorized to use the fume hood.
The default PIN is 0001. Setting the PIN to 0000 will disable this feature.



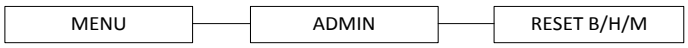
3.2.3.3 A/F Monitor

Whenever the air velocity falls below the fail point, the air fail alarm will be triggered. This option is used to enable/disable alarm. The default value for A/F monitor is enabled.



3.2.3.4 Reset Blower Hour Meter

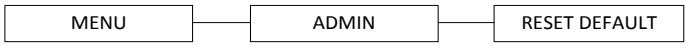
This option is used to reset the blower hour meter. The blower hour meter indicates how long the blower has been in operation. The counter value can be checked while in maintenance mode. The value can also provide some help in setting up maintenance schedule, including filter change.



3.2.3.5 Reset Default

User can reset the default setting by choosing this option. The features being reset are warm-up period (3 minutes), post-purge period (0 minute), UV timer (60 minute), airflow unit (Metric), temperature unit (Celsius), Admin. PIN (0009), Fan PIN (0001) and A/F Monitor (enabled).

Note that the calibration settings cannot be reset as it may cause the BSC to operate in an unsafe manner. The hour meters cannot be reset either.



3.2.4 Setting the Mode

Fume Hood has two working mode, the default normal mode which is used in a day to day activity, and maintenance mode.

3.2.4.1 Normal Mode

Every time the hood is restarted, this mode will be activated by default. In this mode, all alarms and interlocks are enabled.

3.2.4.2 Maintenance Mode

Maintenance mode should only be accessed by qualified personnel during maintenance. In this mode, all alarms are disabled and all interlocks are defeated.

Chapter 4 – Service and Maintenance

4.1 Scheduled Maintenance

Proper and timely maintenance is crucial for trouble free functioning of any device and your Esco fume hood is no exception to this rule. We strongly recommend that you follow the maintenance schedule suggested hereunder in order to obtain optimal performance from your Esco fume hood.

No.	Description of Task to Perform	Maintenance to be carried out every			
		Week	Month	Quarter	1 Year
1	Clean the interior work surface and walls	√			
2	Clean the sash and all glass surfaces	√			
3	Airflow patterns check using a source of visible smoke	√			
4	Inspect the controls of the services to the fume hood		√		
5	Clean the exterior surfaces of the fume hood		√		
6	Check for any blockages at the hood baffles		√		
7	Determine the face velocity and ensure that the hood is operating properly		√		
8	Inspect the fume hood for any physical abnormalities or malfunction			√	
9	Check the sash for proper operation			√	
10	Change the fluorescent lamps				√
11	Re-certification				√
12	Check & clean the ducting system				

Cleaning the fume hood

- Clean the work surface and walls with appropriate disinfectant agent and soap water afterward
- Clean the sash window using an appropriate disinfectant agent and glass cleaner afterward
- Use a damp cloth to clean the exterior surface of the fume hood, particularly on the front and top in order to remove dust that accumulated there
- Use clean water to finish the cleaning and wash away any residue of disinfectant agent, soapy water and glass cleaner
- For removing stubborn stains or spots on the stainless steel surface, make use of MEK (Methyl-Ethyl-Ketone). In such cases, make sure that you wash the steel surface immediately afterwards with clean water and some liquid detergent. Use a polyurethane cloth or sponge for washing. Regularly cleaning the stainless steel surface can help you retain the attractive factory finish.
- Ensure that there's no blockage in and behind the baffle

Check the hood's functionality

- Check the hood's mechanical functionality; ex: sash window – lubricate if necessary
- Check the hood's electrical functionality; ex: fluorescent lamp – replace if necessary
- Check the hood for any defect, repair immediately
- Check the hood's airflow pattern and face velocity to ensure that the hood is functioning properly

Re-certification

All fume hoods must be re-certified annually by a certified engineer. See test report for recertification procedure.

Check and clean the ducting system

4.2 Maintenance/Service Log

It is good practice (and in some cases regulatory requirement) to maintain a log of all maintenance work carried out on your cabinet.

Chapter 5 – Troubleshooting

Under no circumstances should the unit be disassembled, repaired, or converted by unqualified people. Failure to follow these instructions may cause personnel injury and/or loss of property due to malfunctions, electric shocks or fire.

Should the unit malfunction, stop the operation, and then pull out the power plug or turn off the power supply at source. Continuing to operate the unit when it shows signs of malfunctioning may cause electric shocks or fire.

The following troubleshooting are some of the basic problems that can be solved by the user or operator. However if the problem persist, please contact your local distributor.

Problem	Possible Cause
The hood does not work	Ensure that the hood is connected to the building's electrical outlet
	Ensure that the building's electrical outlet is ON
	Ensure that the exhaust blower/fan is connected to the building power line
	Ensure that none of the circuit breaker in the hood is tripped
The hood show poor performance	Ensure that the hood is not overloaded
	Ensure that the exhaust blower/fan rated correctly for this function
	Ensure that the exhaust blower/fan set correctly for this function – request your distributor to re-certify the system and re-set the exhaust blower/fan
The hood's lamp does not work	Ensure that the lamps are switched on by using the LIGHT SWITCH
	Ensure that the hood is connected to the building power line
	If problem persist – contact your local distributor
The hood's electrical outlet does not work	Ensure that the hood is connected to the building power line
	If problem persist – contact your local distributor
The hood's service fixture does not work	Ensure that the service line(s) are connected properly
	Ensure that the source (water/gas/vacuum) is active or available
	If problem persist – contact your local distributor

APPENDIX

LOG RECORD

Fume Hood : _____
Serial Number : _____
Person in Charge : _____

1. This log record should be used by the operator to record any new chemicals that has been introduced to the fume hood during its operation, problems encountered, etc.
2. Please also record any major maintenance procedure performed by the service technician, for example: parts replacement, recertification, etc.

Date	Event	User Signature	Supervisor Signature

In case of emergencies, please call:
Name : _____
Cell Phone Number : _____
E-mail : _____